

layers, each boundary layer being made of a heterogeneous material different from that of said substrate layers,

wherein said plurality of the boundary layers comprises:

at least one first heterogeneous boundary layer interposed between two adjacent solid electrolytic substrate layers;

at least one second heterogeneous boundary layer interposed between one of said solid electrolytic substrate layers and said at least one insulating substrate layer which are located adjacent to each other; and

said first and second heterogeneous boundary layers [having] have a thickness in a range of 10 to 100  $\mu$ m.

2. (Amended) The multilayered air-fuel ratio sensor [in accordance with] according to claim 1, wherein said first and second heterogeneous boundary layers [has] have a porous rate larger than those of neighboring substrate layers.

3. (Amended) The multilayered air-fuel ratio sensor [in accordance with] according to claim 1, wherein said first and second heterogeneous boundary layers [has] have a sintering particle diameter larger than those of neighboring substrate layers.

4. (Amended) The multilayered air-fuel ratio sensor [in accordance with] according to claim 1, wherein said first and second heterogeneous boundary layers comprise[s] a component selected from the group consisting of alumina, spinel and steatite.